Reconsideration of these claims is respectfully requested.

Lang et al. disclose an external cavity, continuously tunable wavelength source. Lang et al. are concerned with avoiding mode hopping between optical cavity longitudinal modes in an external cavity laser diode having an external cavity grating mirror. As part of their solution, Lang et al. disclose that the light source relies on the optical properties of the optical system at a single wavelength, and is characterized by a phase error curve comprising a cubic function with a single root having minimal deviation from zero near the root so that longitudinal mode hopping will not occur during tuning. See Col. 3, lines 57-62.

In rejecting Claims 1-9, 13, 15-19 over Lang et al., the Examiner acknowledges that Lang et al. do not disclose expressly a micro-actuator to select the wavelength, but states that micro-actuators are known throughout various arts and have many uses, as rotation and translation. The Examiner further states that it would have been an obvious matter of design choice to use a micro-actuator, since such a modification would have involved a mere change in the size of a component, the Examiner noting that a change in size is generally recognized as being within the level of ordinary skill in the art.

A proper analysis of the obviousness/nonobviousness of the claimed invention under 35 U.S.C. §103(a) requires consideration of two factors: (1) whether the prior art would have suggested to those of ordinary skill in the art that they should carry out the claimed invention; and (2) whether the prior art would also have revealed that in so carrying out the claimed invention, those of ordinary skill would have a reasonable expectation of success. Both the suggestion and the reasonable expectation of success must be founded in the prior art, not in the applicant's disclosure. *In re Sernaker*, 217 U.S.P.Q. 1, at 5 (Fed. Cir. 1983); and *In re Vaeck*, 20 U.S.P.Q.2d 1438, 1442 (CAFC 1991).

In the present case, the rejection of the claims under 35 U.S.C. §103 is in error because Lang et al. fail to provide the requisite suggestion/motivation to provide a laser assembly of the type called for therein having, among other things, an electromechanical microactuator coupled to one of the diffractive element and the reflective element. The Examiner acknowledges that Lang et al. fail to disclose a microactuator. In addition, however, Lang et al. fail to disclose any actuator, let alone an actuator coupled to one of the diffractive element and the reflective

element. A reader of Lang et al. is left to his or her imagination as to how movement of any of the elements therein should be accomplished. The Examiner has also presented no prior art that would suggest or motivate one skilled in the art to combine a microactuator with a laser assembly of the type disclosed in Lang et al. Applicants respectfully submit that no such suggestion or motivation exists in the prior art.

Even if a microactuator of the prior art was combined with a device of the type disclosed in Lang et al., there is no suggestion or disclosure in the prior art that in so carrying out the claimed invention those of ordinary skill would have a reasonable expectation of success. As noted in the instant application beginning on Page 2, line 12 with respect to the disclosure of Lang et al.:

> The grating-based external cavity tunable laser (ECLs) of 5,771,252 is a relatively large, expensive device that is not suitable for use as a transmitter in a large-scale WDM network. Because of the size and distance between components, assembly and alignment of the prior art ECL above is difficult to achieve. Known prior art ECLs use stepper motors for coarse positioning and piezoelectric actuators for fine positioning of wavelength selective components. Because piezoelectric actuators exhibit hysteresis, precise temperature control is needed. In addition, prior art ECL lasers are not robust in the presence of shock and vibration.

As so stated in the application, known prior art external cavity tunable lasers use relatively large stepper motors and piezoelectric actuators. Such actuators would not be suitable for controlling the diffractive element or the reflective element in the assembly of Claim 1. Furthermore, there is no suggestion in Lang et al. that the apparatus disclosed therein can be scaled down for use with a microactuator.

Further in this regard, most prior art microactuators are laterally driven resonant microstructures which would be unsuitable for use in obtaining static deflection, as required in Applicants' assembly of Claim 1. The resonant operation of such prior art microactuators would be unsuitable for use in a laser assembly where repeatable and distinct static deflections are required. Furthermore, the amount of static deflection obtainable by prior art microactuators is typically significantly less than the static deflection required in the laser assembly of Claim 1.

In view of the foregoing, the Examiner's rejection of Claim 1 as being obvious over Lang et al. is improper and should be withdrawn. Claim 1 should be found allowable.

Claims 2-12 depend from Claim 1 and are patentable for the same reasons as Claim 1 and by reasons of the additional limitations called for therein.

Amended Claim 13 calls for a tunable laser comprising source means for providing a light along an optical path with any wavelength selected from a bandwidth of wavelengths, a diffractive element positioned in the optical path and spaced from the source by a first distance to redirect the light, a reflective element positioned in the optical path and spaced from the diffractive element by a second distance to receive the redirected light from the diffractive element and to redirect the light back towards the diffractive element, the light being redirected by the diffractive element back towards the source, and an electrically-driven micro-actuator for selecting the wavelength from the bandwidth of wavelengths by altering the optical path of the light, the micro-actuator including a substrate and at least one rotary comb drive carried by the substrate.

Claim 13 is patentable for the reasons discussed above with respect to Claim 1. Claim 13 is additionally patentable by providing that the micro-actuator includes a substrate and at least one rotary comb drive carried by the substrate, limitations not suggested or disclosed by the cited references.

Claims 14-15 depend from Claim 13 and are patentable for the same reasons as Claim 13.

Amended Claim 16 is patentable for the reasons discussed above by calling for a method for providing light with any wavelength selected from a range of wavelengths, comprising the steps of providing the light along an optical path, providing a diffractive element in the optical path to diffract the light, providing a reflective element in the optical path to reflect the light and selecting a particular wavelength of light from the range of wavelengths by altering the optical path through displacement of a micro-actuator.

Claims 17-20 depend from Claim 16 and are patentable for the same reasons as Claim 16.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version with Markings to Show Changes Made."

In view of the foregoing, it is respectfully submitted that the claims of record are allowable and that the application should be passed to issue. Should the Examiner believe that the application is not in a condition for allowance and that a telephone interview would help further prosecution of this case, the Examiner is requested to contact the undersigned attorney at the phone number below.

Respectfully submitted,

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## VERSION WITH MARKINGS TO SHOW CHANGES MADE

A. The following claim has been amended as indicated:

1. (Amended) A laser assembly[,] comprising[:] a source for providing a light along an optical path with any wavelength from a [continuous] range of wavelengths[;], a diffractive element positioned in the optical path and spaced from the source by a first distance to redirect the light[;], a reflective element positioned in the optical path and spaced from the diffractive element by a second distance to receive the redirected light from the diffractive element[, and the reflective element positioned in the optical path and from the diffractive element by the second distance] and to redirect the light back towards the diffractive element[; the diffractive element positioned in the optical path and from the source by the first distance to re-direct], the light being redirected by the diffractive element back towards the source[;], and [a] an electromechanical micro-actuator coupled to one of the diffractive element and the reflective element for selecting the wavelength from the [continuous] range of wavelengths by altering the optical path of the light.

2. (Amended) The laser assembly of claim 1, wherein the first distance and the second distance define an optical path length between the source and the reflective element measured in wavelengths, and wherein the optical path length remains constant over the [continuous] range of wavelengths.

10. (Amended) The laser assembly of Claim 2, wherein the [continuous] range of wavelengths comprises from about 1520nm to about 1560nm.

13. (Amended) A tunable laser[,] comprising[: a] source means for providing a light along an optical path with any wavelength selected from a [continuous] bandwidth of wavelengths[;], a diffractive element positioned in the optical path and spaced from the source by a first distance to redirect the light[;], a reflective element positioned in the optical path and spaced from the diffractive element by a second distance to receive the redirected light from the diffractive element[, and the reflective element positioned in the optical path and from the diffractive element by the second distance] and to redirect the light back towards the diffractive element[; the diffractive element positioned in the optical path and from the source by the first

distance to re-direct], the light being redirected by the diffractive element back towards the source[;], and [a] an electrically-driven micro-actuator [means] for selecting the wavelength from the [continuous range] bandwidth of wavelengths by altering the optical path of the light, the micro-actuator including a substrate and at least one rotary comb drive carried by the substrate.

16. (Amended) A method for providing light with any wavelength selected from a [continuous] range of wavelengths, comprising the [following] steps[:] of providing the light along an optical path[;], providing a diffractive element in the optical path to diffract the light[;], providing a reflective element in the optical path to reflect the light[;] and selecting a particular wavelength of light from the [continuous] range of wavelengths by altering the optical path through displacement of a micro-actuator.

20. (Amended) The method of Claim 16, further comprising the step of selecting the particular wavelength from a [continuous] range of wavelengths comprising the range of from about 1520nm to about 1560nm.